What is claimed is:

1. A packet routing device accommodating a plurality of virtual private networks (VPNs), comprising:

a switch; and

a plurality of packet processing units each having a routing table,

wherein each packet processing unit, in the case of receiving a packet received at a receipt port, searches, as a receiving-side packet processing unit, for a transmitting-side packet processing unit for forwarding the packet to a transmission port from the routing table by use of a receiving-side VPN identifier of the packet, and forwards the packet to a packet processing unit corresponding to the transmitting-side packet processing unit, and,

in the case of receiving a packet via the switch from a receiving-side packet processing unit, searches, as a transmitting-side packet processing unit, for a transmission port for the packet from the routing table by use of a transmitting-side VPN identifier of the packet, and forwards the packet to the transmission port searched for.

2. A packet routing device according to claim 1, wherein each of the packet processing units, in the case of functioning as the receiving-side packet

processing unit, searches for a corresponding transmitting-side packet processing unit and a transmitting-side VPN identifier from the routing table by use of the receiving-side VPN identifier, and forwards the searched transmitting-side VPN identifier to a transmitting-side packet processing unit, and,

in the case of functioning as the transmitting-side packet processing unit, searches for a corresponding transmission port from the routing table by use of the transmitting-side VPN identifier from the receiving-side packet processing unit.

3. A packet routing device according to claim 2, wherein each of the packet processing units as a receiving-side packet processing unit, in case a receiving-side VPN identifier is the same as a transmitting-side VPN identifier searched for, forwards a transmitting-side VPN identifier having an equal value to the receiving-side VPN identifier, to a transmitting-side packet processing unit.

4. A packet routing device according to claim 2, wherein each of the packet processing units, in the case of functioning as a receiving-side packet processing unit, searches for a VPN identifier, as a receiving-side VPN identifier, corresponding to a receipt port of a packet.

5. A packet routing device according to claim 3, wherein each of the packet processing units, in the case of functioning as a receiving-side packet processing unit, searches for a VPN identifier, as a receiving-side VPN identifier, corresponding to a receipt port of a packet.

6. A packet routing device according to claim 1, further comprises entry registering means for executing a process of registering one or more entries in the routing table of each packet processing unit, wherein the entry registering means receives a plurality of entries as candidates for registration with respect to a certain packet processing unit, each entry includes a VPN identifier as a search key, and packet processing unit identifying information and a transmitting-side VPN identifier corresponding to the VPN identifier as the search key, the entry registering means executes a process for registering in the routing table only one or more entries that, among the plurality of entries as the candidates for registration, the packet processing unit identifying information included in the entry indicates the certain packet processing unit, and that the VPN identifier as the search key is the same as the transmitting-side VPN identifier.

7. A packet routing device disposed between a network side and a user side, accommodating a plurality of virtual private networks (VPNs), and accommodating a user terminal belonging to any one of the VPNs, comprising:

a switch; and

a plurality of packet processing units each having a routing table,

wherein each packet processing unit, in the case of receiving a packet received at a receipt port and addressed to a user terminal, searches, as a receiving-side packet processing unit, for a transmitting-side packet processing unit and a transmitting-side VPN identifier corresponding to a receiving-side VPN identifier and a destination network address of the packet from a routing table, and,

in the case of receiving a packet and a transmitting-side VPN identifier from a receiving-side packet processing unit via the switch, searches, as a transmitting-side packet processing unit, for a transmission port corresponding to the transmitting-side VPN identifier and to a destination host address of the packet from the routing table, and forwards the packet to the transmission port searched for.

8. A packet processing device provided in a packet routing device accommodating a plurality of

virtual private networks (VPNs) with at least one other packet processing device, comprising:

a receiving-side packet processing unit;

a transmitting-side packet processing unit; and

a routing table,

wherein the receiving-side packet processing unit receives a packet received at a receipt port of the packet routing device and searches for other packet processing device for forwarding the packet to a transmission port from the routing table by use of a receiving-side VPN identifier of the packet, and

the transmitting-side packet processing unit receives a packet forwarded from other packet processing device and searches for a transmission port of the packet from the routing table by use of a transmitting-side VPN identifier of the packet.